# In-sourcing – Out-sourcing
# A pratical guideline in making the right choice.

**TMC Electronics**
**D&E 2017 Den Bosch**

**V13, 12 October 2017**

# Topics

- TMC Group / TMC Electronics
- Context In-sourcing – Out-sourcing
- Customer Case
- Experience Metrics
- Conclusions


What we do

## INSOURCING, CONSULTANCY & PROJECTS

**900+**
Employeeurs

**200+**
Customers

**11**
International Locations

**€ 70 MILLION**
Revenue

## EXPERTISES

- Application Lifecycle Man.
- Chemical
- Civil Engineering
- Electronics
- Field Service
- Industrial Automation
- International Site Man.
- Manufacturing Support
- Mechanical
- Mechatronics
- Nanotechnology
- New Product Introduction
- Physics
- Software
- Technology Executives
- Test & Integration

## PILLARS

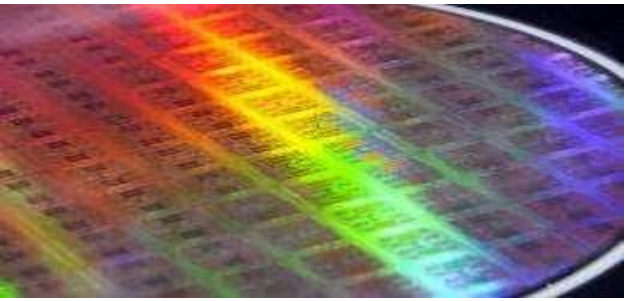
- Individual profit sharing
- Permanent contract
- YOUniversity
- The Entrepreneurial Lab
- Business Cells

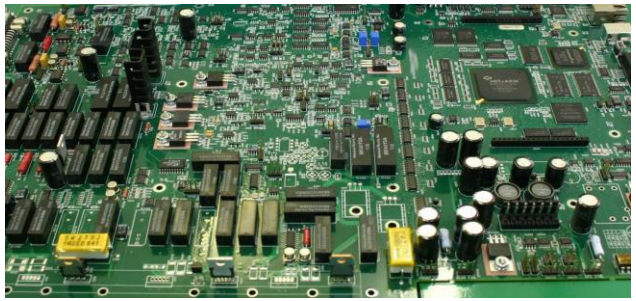
PEOPLE DRIVE TECHNOLOGY

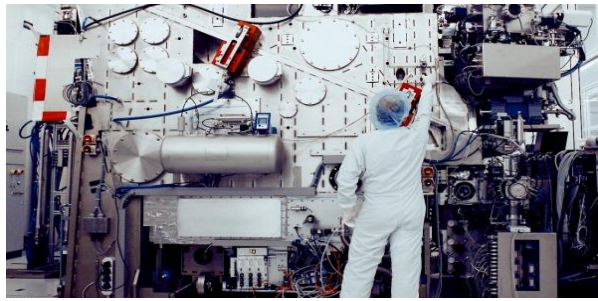
## TMC Electronics (~60 people in NL), TMC Group ~100 people

# Services: Chip, Board, System

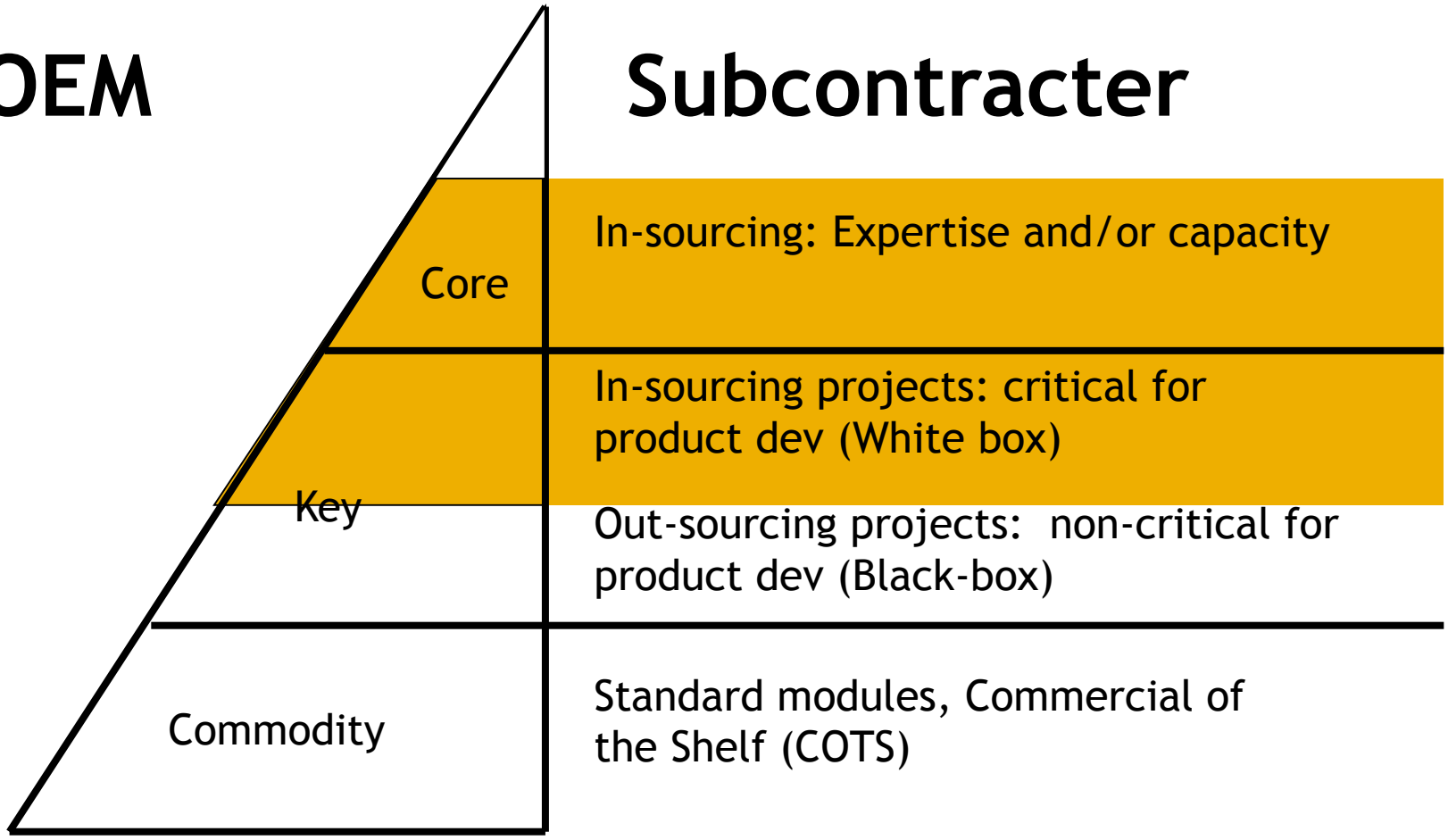
## Involved in Product Development, from Research till 0-Series



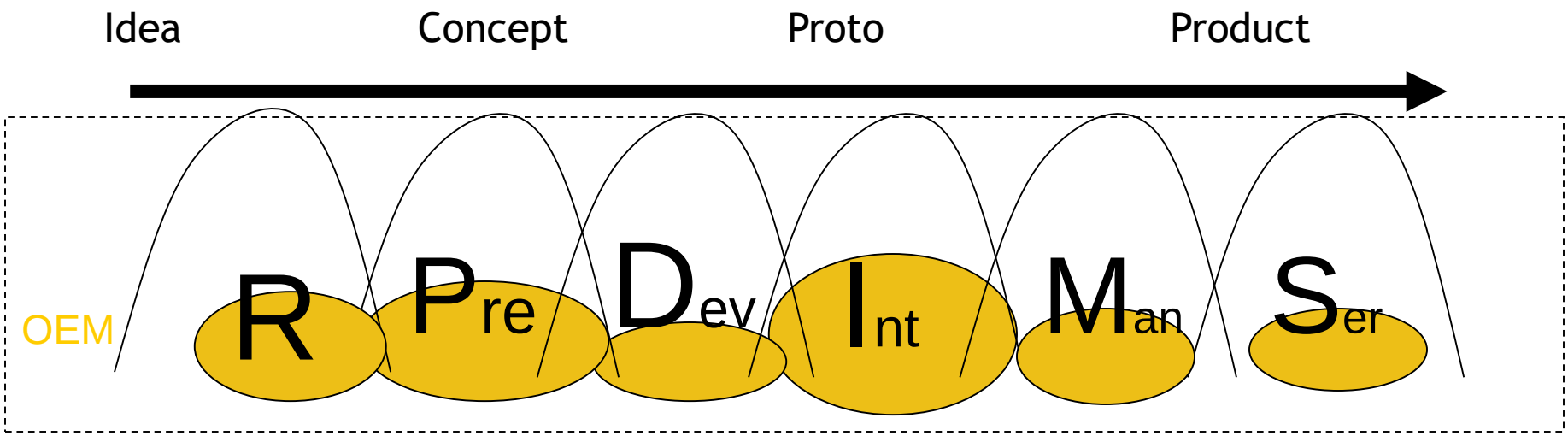




# Context


OEM
Subcontracter
Core
Key
Commodity
In-sourcing: Expertise and/or capacity
In-sourcing projects: critical for product dev (White box)
Out-sourcing projects: non-critical for product dev (Black-box)
Standard modules, Commercial of the Shelf (COTS)

# OEM Electronics Product Dev




- Completely done by OEM, eventually with in-sourcing, OEM LCM

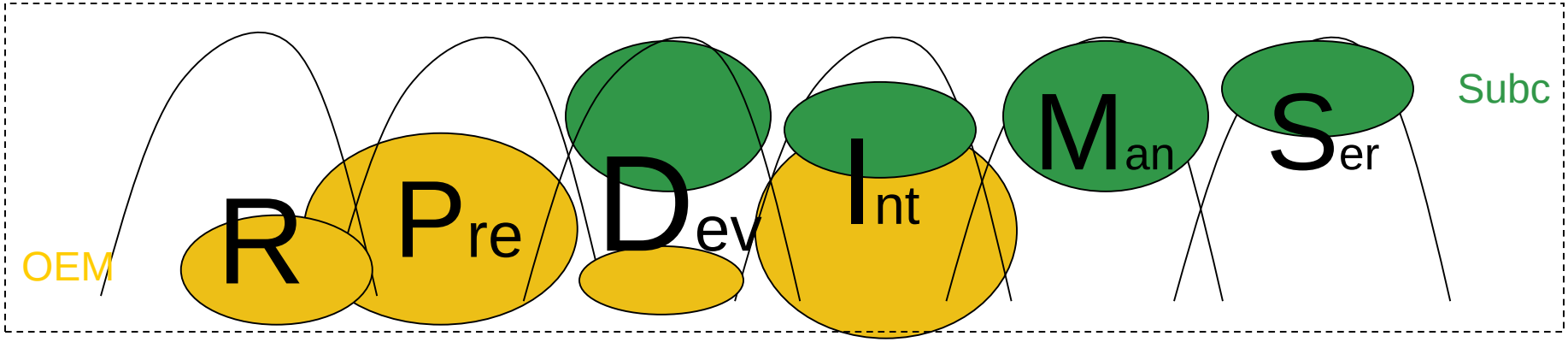
# In House

- Make **Brief Requirements** and/or Specification
- Do an estimation based on workbreakdown and risk assesment
- Development at location, Systemknowledge + short loops
- Interpretation of specs leads to design and implementation
- Delivery of prototype to be integrated with software/mechanics
- After re-design, start of 0-series
- Examples: Philips < 1990

# OEM Electronics Product Dev

Idea → Concept → Proto → Product

- OEM subcontracts development and/or production, OEM does specification, Subc LCM



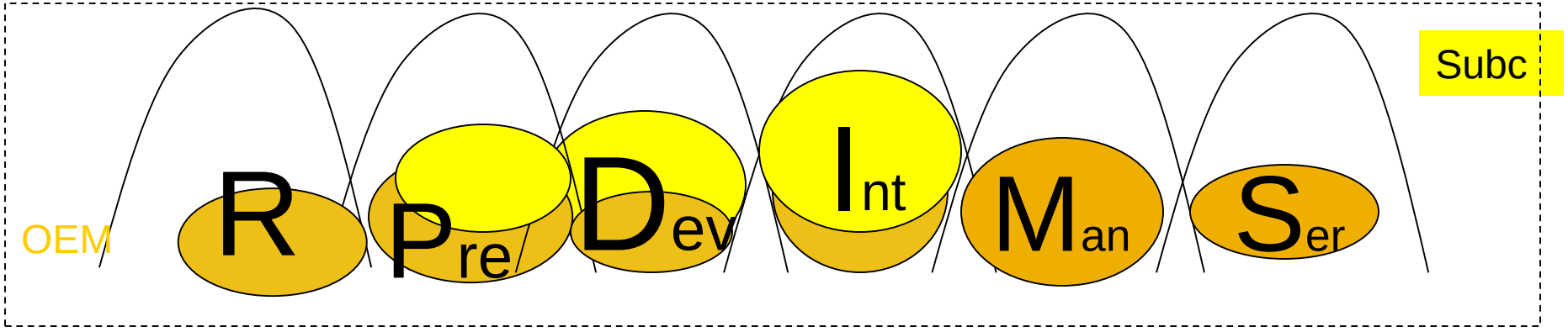
# Out-Sourcing

- Make **Extensive Requirements** and/or Specification
- Make RFQ detailled
- Well defined and clear communication interface (Formal)
- Subcontractor choosen based on (NRE, BOM, Quality, Timeframe, Knowledge, risk ...). Contract signed, create team
- You need an organisation on several levels, both OEM as Subcontracter
- Development at location of subcontractor at distance, long loops
- Interpretation of specs leads to errors in design and implementation
- Delivery of prototype to be integrated with software/mechanics
- After re-design, start of 0-series
- Examples: ASML

# OEM Electronics Product Dev

Idea Concept Proto Product

- OEM and Subc work together as early as possible (Co-creation)
- LCM by OEM
- Subc delivery teams in-house OEM



# In Sourcing of Projects / Farm-out

- Make **Brief Requirements** and/or Specification together
- Do estimation based on workbreakdown and risk assesment, make modules (Co-create)
- Development at location OEM, System knowledge + short loops, together
- Interpretation of specs leads to design and implementation, together
- Delivery of prototype to be integrated with software/mechatronics, together
- After re-design, start of 0-series
- Examples: ASML: Farm-out Projects

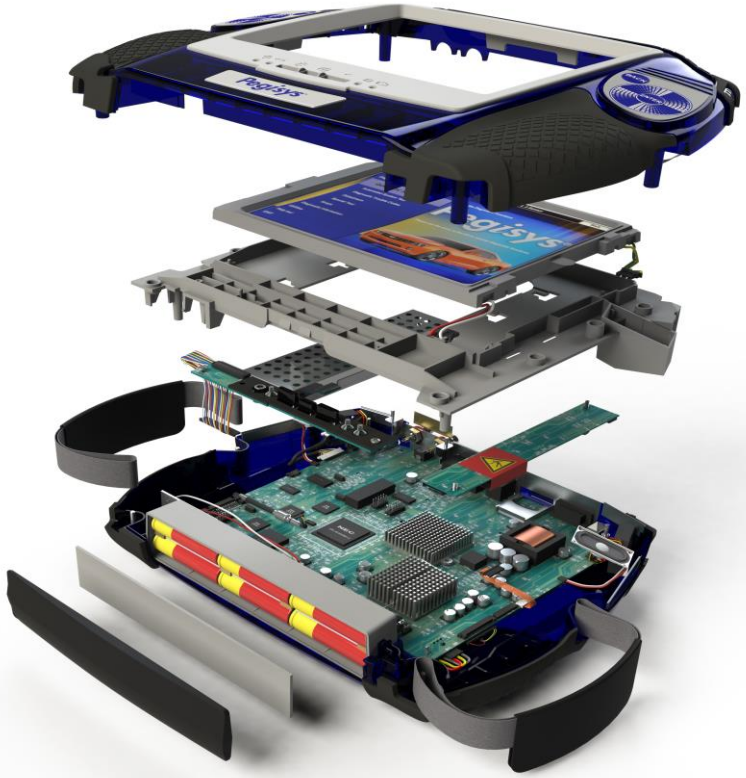
# Customer Case

**Development HW boards for Customer products**

**Used different project approaches and contract formats**

**Approaches:**

- Out-sourcing
- In-sourcing



# Customer Case

OUT-SOURCING

## Out-sourcing seen from OEM

….. Often fixed price, Spec is leading, driven on price

Not in spec, is not done →Expectation End result ! Quality !

Ping-pong effects, not one team working on product

Subcontractor should **understand** the way WE do things !

## Out-sourcing seen from subcontractor

Fixed price, estimate often optimistic, danger of overspend !

Not in spec, is not finished, or extra Change Request, extra effort/cost

Relation OEM can come under pressure if subcontracter is formal/informal

Planning often shifts or the project, delivers what minimal needed

….

# Customer Case

## In-sourcing seen from OEM

- Spec still under development,  do it together gives early involvement, driven on best solution
- One team working on product, as partners
- Expectation management is good, control is direct
- Knowledge transfer easy for LCM
- Subcontractor is **strongly involved** in the way WE do things !

## In-sourcing seen from subcontractor

- Doing estimates together with impact of system knowledge taken into account
- Not the traditional customer-subcontractor relation but co-development
- Focus on managing the risk
- Planning stability often good, less formal relation
- ……

IN-SOURCING

# Metrics

- Case Out-sourcing FP, Control Board
- Case Out-sourcing T&M, Motion Board
- Case In-sourcing team, Control Board

| Project | Contract | Quality | Relation | Elapse Time | Hours OEM | Hours SubC | Hour rate |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Control | FP | 2 redesigns | - | 210% | 50% | 200% | High |
| Motion | T&M | 1 redesign | 0/+ | 150% | 30% | 130% | High |
| Control | TH | 0 | + | 120% | 20% | 120% | Low / Mid |

# Results

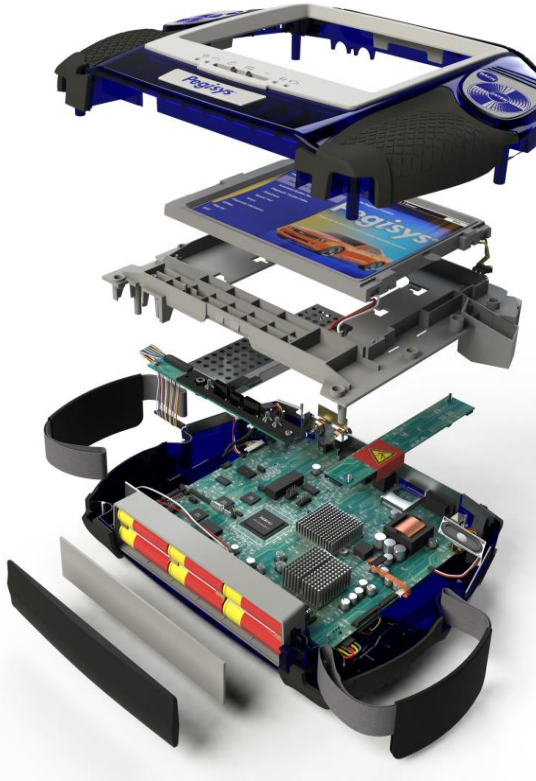
- Learning curve influences strongly expected results, missing systemknowledge and hidden Req, cost both Subc and OEM a lot of elapsetime and money

- FP is not good for relation, elapsetime and total costs, especially for Subcontractor

- When you start working together, do not begin with FP, maybe later, but OEM will have different view

- Subcontracting cost an OEM also a lot of time, especially with new relations roughly 1:2, this moves up to 1:4 for more mature relations after many years

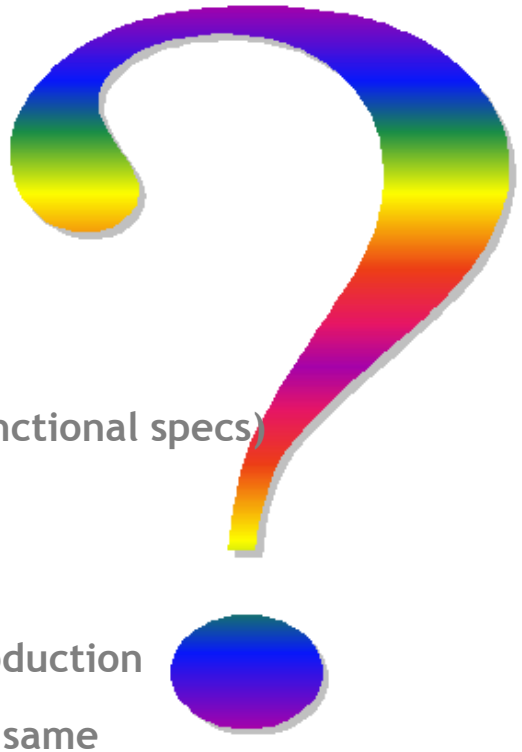
- Example ASML-Zeiss, ASML-VDL-ETG



# Conclusion

## When In-sourcing your projects ?

- Technical complex project
- A lot of system knowledge is needed
- Time frame is critical and/or many dependencies of other modules
- Go for the best solution (technical, BOM, quality)



## When Out-sourcing your projects ?

- Projects which contain less risk and can be specified well (mostly functional specs)
- Not directly critical for planning
- Not to many dependencies or less interfaces
- Make subcontractor completely responsible for development and production
- Long-term working relation with subcontractor is needed to talk the same wavelength

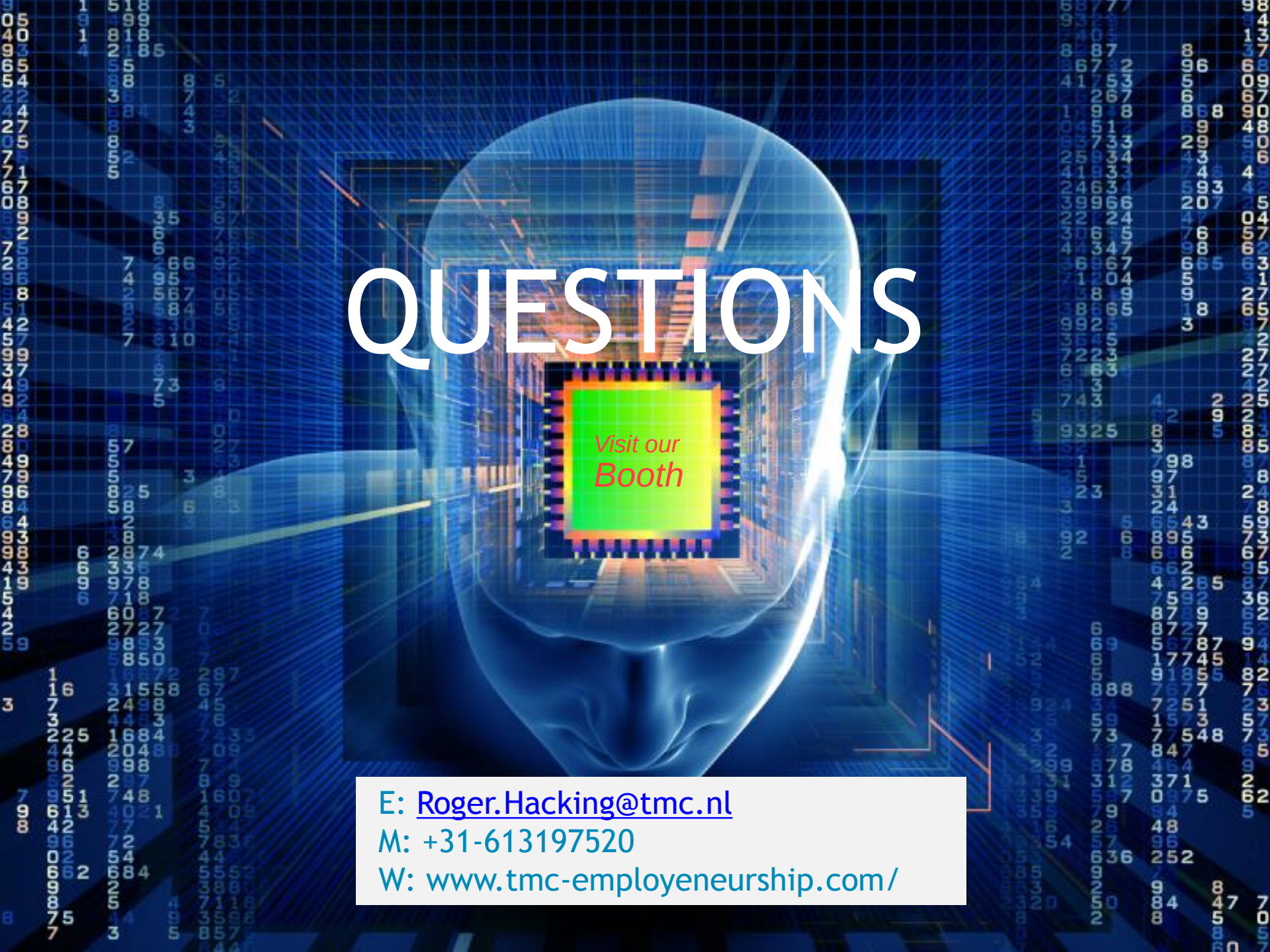
# And finally

TMC PEOPLE DRIVE TECHNOLOGY

TMC PEOPLE DRIVE TECHNOLOGY

TMC PEOPLE DRIVE TECHNOLOGY

# QUESTIONS




E: Roger.Hacking@tmc.nl
M: +31-613197520
W: www.tmc-employeneurship.com/